REMARKS/ARGUMENTS

The Office Action dated March 13, 2007, has been reviewed in detail and it is noted that Claims 1, 3, 5-11 and 17-25 are pending in the application, and Claim 17 has been amended herein. It is further noted that these same claims are rejected by the Examiner. It is noted that the Applicants' amendments and remarks filed on 12/13/2006 have been made of record and entered. It is also noted that the terminal disclaimer filed on 12/13/2006 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of copending application No. 10/314,660 has been reviewed and accepted by the Examiner. Further, the terminal disclaimer has been recorded.

The Applicants have carefully reviewed the Examiner's rejections, and respectfully traverse the Examiner's rejections. The Applicants assert that the amendment, remarks and arguments provided herein further clarify the invention and address the Examiner's rejections presented in the Final Office Action., and demonstrate that the application is in condition for allowance, or in a better condition for consideration on Appeal.

Applicant retains the right to pursue broader claims via a continuing application under 35 U.S.C. § 120.

Claims Rejections - 35 USC § 102(b)

The Examiner has rejected Claims 1, 3, 5-11, and 17-25 under 36 USC § 102(b), as being anticipated by the Maier reference, U.S. Patent No. 6,121,187. Specifically, the Examiner stated:

> *Maier discloses an amorphous mixed oxides, wherein at least 50% of said mixed oxides consists of one or a mixture of oxides of titanium, silicon, alumina or zirconium, and up to 50% by weight of consists of one or more metal oxides selected from a group of elements including Sn, Hf, La, Ce, etc. and the claimed promoters, i.e., Fe, Co, Ni (see col. 14, claims 1 & 3). The mixed oxides additionally contains up to 5% by weight of at least one of the elements Pt, Rh, Ir, Os, Ru, Re, Ag, Au, Cu, Ni, Pd, Co in highly dispersed form in a metallic or non-metallic state (see col. 14, claim 4).*

Regarding claims 1, 3, 5-6, 17-20, the disclosed noble metal and the first, second, and third metal oxides concentrations are falling within the claimed ranges (see above), thus the claims are met.

With respect to the claimed first, second, and third metal oxide mass ratio, it is inherent that the mass ratio of these metal oxides would be the same as being claimed in view of the same metal concentrations of these metal oxides disclosed above.

Regarding claims 7-11 & 21-25, the claims are met by the teaching of the reference in view of the teaching that the disclosed catalyst is suitable for used in various reactions including the claimed reactions (see Maier at col. 5, ln 41-67).

There is no patentable distinction seen between the claimed catalyst and that disclosed by Maier. Thus, the claims are anticipated by the reference.

In response, it is respectfully submitted that the Maier reference does not anticipate the present invention as recited in Claim 1, for the reasons set forth in Applicant's Response dated December 13, 2006. Claim 1 recites a mixed-metal oxide layer comprising tin-oxide, zirconium oxide and a third metal oxide selected from the group consisting of cerium oxide, hafnium oxide, lanthanum oxide, and ruthenium oxide, wherein the first metal oxide, second metal oxide, and third metal oxide have a mass ratio of about 1.0: 0.5: 0.5, and it is again respectfully submitted that this mixed-metal layer, with the recited mass ratio, is not expressly or inherently described by Maier.

In support of this assertion it is respectfully pointed out that the Maier reference discloses a catalyst wherein:

> The preparation and composition of these materials can be stated briefly as follows:
> $$x(RO)_4Si+y(R'Si(OR^1)_3)+z(X)_nM+H_2O \rightarrow (R'-SiO_{1.5})_x (MO_{n/2})_zSiO_2)_y+4xROH+3yR^1OH+nHX$$
> where R and R' are suitable alkyl or aryl groups which may be the same or different, R' is the non-hydrolyzable organic group which changes the hydrophilicity of the material, and M is an element of the group consisting of Si, Ti, Al, Mo, Sn, Zn, V, Mn, Fe, Co, Ni, As, Pb, Sb, Bi, Ru, Re, Cr, W, Nb, Hf, La, Ce, Gd, Ga, In, Tl, Ag, Cu, Li, K, Na, Be, Mg, Ca, Sr and Ba and mostly represents the carrier of the catalytic activity….The base material in this example is SiO_2 which may be replaced by Al_2O_3, TiO_2 or ZrO_2,…" (Maier, column 2, lines 39-64, emphasis added)

Additionally, claim 3 of Maier recites:

> "… wherein at least 50% of said mixed oxides consists of one or a mixture of oxides of titanium, silicon, alumina or zirconium, and up to 50% by weight of consists of one or

> *more* metal oxides in atomic distribution of the group of elements consisting of Mo, **Sn,** Zn, V, Mn, Fe, Co, Ni, As, Pb, Bi, **Ru**, Re, Cr, W, Nb, **Hf, La, Ce**, Gd, Ga, In, Tl, Ag, Cu, Li, K, Na, Be, Mg, Ca, Sr and Ba." (Emphasis added.)

In light of the above, it is respectfully again submitted that the Maier reference does not teach or suggest the recited mass ratio of the metal oxides. To the contrary, it is contended that the Maier reference teaches away from this ratio. In further support of this re-assertion, Applicant's will attempt to more clearly explain this position in the instant Response.

To start, while Applicant again respectfully submits that the Maier reference does not teach or suggest the combination of metal oxides recited in the instant claims, nevertheless, assuming arguendo that such a teaching existed, it is still respectfully submitted that the recited mass ratio, namely, "wherein said first metal oxide, second metal oxide, and third metal oxide have a mass ratio of about 1.0: 0.5: 0.5," is not anticipated by the Maier reference.

To more fully explain, first, it must be noted that the recited ratio of 1.0: 0.5: 0.5 specifically references the ratio of tin oxide to zirconium oxide to a third metal oxide (selected from the group consisting of cerium oxide, hafnium oxide, lanthanum oxide, and ruthenium oxide). Thus, as recited in Claim 1, **the tin-oxide has a mass ratio about twice that of each of the other two metal oxides** (i.e., twice that of zirconium oxide and twice that of the third metal oxide). This is not disclosed nor suggested by the Maier reference.

To the contrary, the Maier catalyst specifically states that **at least 50%** by weight of the Maier catalyst contains "*one or a mixture of oxides of titanium, silicon, aluminum or **zirconium**.*" Thus, in the Maier catalyst, this would then leave **50% or less** of the remaining weight of the metal oxides in the catalyst to contain all additional metal oxides, '*including **tin** (Sn) **and Hf, La, Ce, Ru,** etc" (*as referenced by the Examiner, with emphasis added). Therefore, this description in no way teaches that the mass ratio of tin oxide should be twice that of zirconium oxide, nor twice that of one of the recited third metal oxides (e.g. cerium oxide).

That is to say, applying this Maier teaching to the instant invention, as recited in Claim 1, because zirconium is recited, therefore, at least 50% of the mixed metal oxides of the catalyst would necessarily consist of one or a mixture of oxides containing zirconium. As in the Maier catalyst, this would then leave 50% or less of the remaining mixed oxides to encompass the other

metal oxides in the catalyst. In the instant invention this "50% or less" would necessarily include **both** the recited tin oxide (i.e., the recited first metal oxide), and one of cerium oxide, hafnium oxide, lanthanum oxide or ruthenium oxide (i.e., the recited third metal oxide). Because Claim 1 specifically recites a mass ratio of tin oxide: to zirconium oxide: to third metal oxide to be about 1.0: 0.5: 05, respectively, with tin oxide having about twice the mass ratio of the other two metal oxides, it is submitted that these mass ratios do not inherently fall within the ranges disclosed by Maier. Rather, the Maier references teaches that the predominate metal oxide(s) in their catalyst is "*one or a mixture of oxides of titanium, silicon, aluminum or zirconium*, and not predominately tin oxide, as recited by the instant Claim 1.

For these reasons Claim 1, as currently pending, is believed to fully distinguish from the Maier reference and is believed to be in condition for allowance. Because Claims 3, 5 and 6-11 depend from independent Claim 1, they too are believed to be in condition for allowance based on this dependency.

As to independent 17, this Claim now recites:

17. A low-temperature oxidation-reduction catalyst comprising:
a noble metal selected from the group consisting of platinum, palladium, gold, silver and rhodium;
a solely mixed-metal oxide layer comprising:
a first metal oxide which possesses more than one stable oxidation state consisting of tin oxide;
a second metal oxide consisting of zirconium oxide; and
a third metal oxide selected from the group consisting of cerium oxide, hafnium oxide, lanthanum oxide, and ruthenium oxide;
said first, second and third metal oxide each being an active catalytic component of said mixed-metal oxide layer; and
wherein said noble metal is from about 1 to about 50 weight percent, based on the total weight of the catalyst; and the first, second and third metal oxide are collectively from about 50 to about 99 weight percent, based on the total weight of the catalyst.

It is respectfully submitted that this claim distinguishes from the Maier reference in that the Maier reference does not teach or suggest the feature of "a ***solely*** mixed-metal oxide layer"

comprising the recited first, second and third metal oxides. Support for this amendment can be found in the "Example" beginning on page 5 of the originally filed specification.

The Maier reference, as understood, states that its mixed oxides are "distinct from all other shape-selective or highly porous mixed oxide catalysts" in that the Maier catalyst contains "more than 1 mole % of non-hydrolyzable organic compounds," in its "homogenous element distribution," and wherein, these non-hydrolyzable organic residues are "prominently responsible for the catalytic activity and selectivity" of the Maier catalyst (Maier, column 4, line 65 to column 5, line 9). Maier further teaches that "It is of particular importance to this invention that the elemental components of the finished catalyst are homogeneously mixed rather than being present in domains. Thus, they are true chemical mixed oxides." (Emphasis added, Maier, column 4, lines 38-40.)

Because Claim 17 now recites " a **solely** mixed-metal oxide layer..." it is respectfully submitted that this claim is not anticipated by the Maier reference. Rather, the Maier reference specifically teaches away from such a layer, teaching, as stated above, that its mixed-oxides catalyst is "distinct from all other shape-selective or highly porous mixed oxide catalysts" in that the Maier catalyst contains "more than 1 mole % of *non-hydrolyzable organic compounds*," Maier further teaches that: its catalyst's elemental components are homogeneously mixed rather than being present in domains.

Based on the above, it is submitted that the instant invention as recited in independent Claim 17, fully distinguishes from the Maier reference. Because Claims 18-25 depend from what is believed to be an allowable base claim, Claim 17, they too are now believed to be in condition for allowance.

In light of the above, reconsideration and withdrawal of the instant rejection are respectfully requested.

CONCLUSION

It is submitted that the Applicants have submitted new and unique Stabilized Tin-Oxide-Based Oxidation/Reduction Catalysts. In view of the above, it is submitted that Claims 1, 3, 5-11, and 17-25 are in condition for allowance. Therefore, it is requested that a Notice of Allowance be issued at an early date.

Respectfully submitted,

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